Application no.: 08/786,988 Docket no.: SEQ-2001-UT2

AMENDMENT

In the claims

Please cancel claims 1-107 without prejudice or disclaimer and enter the new claims provided below.

1-107 (cancelled)

108 (new). An automated process for depositing a defined amount of matrix for matrix-assisted laser-desorption ionization (MALDI) mass spectrometric analysis at a plurality of discrete locations on the surface of a substrate, which comprises

depositing a defined and controlled 0.2 to 20 nanoliter volume of a solution comprising the matrix, a solvent and no analyte at a plurality of discrete locations on the surface of a substrate by an automated dispenser, and

allowing the solvent to evaporate thereby forming an array of spots on the surface of the substrate consisting essentially of matrix.

109 (new). The automated process of claim 108, wherein the automated dispenser comprises a vesicle having a chamber and a transducer element for ejecting fluid from the chamber.

110 (new). The automated process of claim 109, wherein the transducer element is selected from the group consisting of piezoelectric, electric, electrorestrictive, magnetorestrictive, electromechanical transducers and the like.

111 (new). The automated process of claim 109, wherein the transducer element is a piezoelectric transducer.

112 (new). The automated process of claim 108, wherein the automated dispenser deposits the solution without touching the surface of the substrate.

113 (new). The automated process of claim 108, wherein the automated dispenser comprises a vesicle that comprises an interior chamber suitable for carrying a solution.

114 (new). The automated process of claim 108, wherein the automated dispenser comprises a vesicle that comprises a pin having a chamber of sufficient narrow bore to allow the chamber to at least partially fill with a solution by capillary action.

115 (new). The automated process of claim 108, wherein the automated dispenser deposits the solution by contacting the surface of the substrate.

116 (new). The automated process of claim 108, wherein the automated dispenser comprises a vesicle that comprises a solid shaft of material.

117 (new). The automated process of claim 108, wherein the automated dispenser comprises a vesicle that is rastered over the surface of the substrate.

118 (new). The automated process of claim 108, wherein the automated dispenser comprises a plurality of vesicles in an array.

119 (new). The automated process of claim 108, wherein the matrix is 3-hydroxypicolinic acid.

120 (new). The automated process of claim 108, wherein the solution comprises CH_3CN.

121 (new). The automated process of claim 108, wherein the solution comprises 50% CH_3CN.

122 (new). The automated process of claim 108, wherein the substrate comprises material selected from the group consisting of silica, glass, cellulose, silicon, metal, plastic, polymer and metal-grafted polymer.

123 (new). The automated process of claim 108, wherein the substrate comprises a flat surface, a flat surface with pits, a solid or porous bead, a membrane or a pin.

124 (new). The automated process of claim 108, wherein the substrate comprises silicon.

125 (new). The automated process of claim 108, wherein the substrate comprises a metal.

126 (new). The automated process of claim 108, wherein the substrate comprises a plastic.

127 (new). The automated process of claim 108, wherein the substrate comprises a membrane.

128 (new). The automated process of claim 108, wherein the substrate comprises a metal-grafted polymer.

129 (new). The automated process of claim 108, wherein the substrate is chemically functionalized.

130 (new). The automated process of claim 108, wherein the substrate is chemically functionalized with beads.

131 (new). The automated process of claim 108, wherein the substrate is chemically functionalized with a dendritic material.

132 (new). The automated process of claim 108, wherein the solution consists essentially of the matrix and the solvent.

133 (new). The automated process of claim 108, wherein the solution consists of the matrix and the solvent.

134 (new). The automated process of claim 108, wherein the spot is a flat disk.

135 (new). The automated process of claim 108, which further comprises depositing a defined and controlled volume of another solution comprising an analyte on one or more spots.

136 (new). The automated process of claim 135, wherein the solution comprising the analyte dissolves the matrix.

137 (new). The automated process of claim 135, wherein the matrix and analyte form crystals.

138 (new). The automated process of claim 135, wherein an analyte is a nucleic acid.

139 (new). The automated process of claim 108, wherein the volume is reproducible at the discrete locations.

140 (new). The automated process of claim 108, wherein the amount of matrix is reproducible from spot to spot.

141 (new). The automated process of claim 135, wherein MALDI mass spectra obtained from spots in the array are reproducible.

142 (new). The automated process of claim 141, wherein the MADLI mass spectra obtained directly from spots in the array are reproducible with a relative standard deviation of about 0.1%.

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143 (new). The automated process of claim 108, wherein MALDI mass spectra obtained directly from spots in the array are reproducible if a defined amount of a nucleic acid analyte is deposited on the spots.

144 (new). The automated process of claim 108, wherein the spot size is defined by 800 micrometers by 800 micrometers or less.

145 (new). The automated process of claim 108, wherein the spot size is defined by 450 micrometers by 450 micrometers or less.

146 (new). The automated process of claim 108, wherein each spot in the array consists of matrix.